

CLAIMS

1. An airborne laser image capturing system comprising:
 - a. A laser source and laser focal plan array, both being mounted on a same gimbals platform;
 - b. A pulse generator for providing a series of pulses to said laser source during a scanning period, thereby activating laser illumination by said laser source during each of said pulses, the laser source being characterized in that its illumination beam is so concentrated that each pulse provides illumination of only a portion of the expected target;
 - c. A scanning unit for receiving a line of sight direction to a target, and for providing to the gimbals a scanning signal for effecting a sequential stepping-scanning movement in such a manner as to scan an area in which the target is included;
 - d. A motion compensation unit for providing to said gimbals, in addition to said scanning signal a motion compensation signal for compensating for the aircraft motion and for the aircraft vibrations;
 - e. A timing unit for:
 - i. Activating, in coordination with the said scanning

- unit, said pulse generator during the scanning period, in order to produce over the target a plurality of illumination spots, each relating to one of said laser pulses, and wherein each of said spots overlaps at least a portion of one or more adjacent spots; and
- ii. Activating said laser focal plan array during the illumination of the target by each specific pulse in order to capture many of distinct spot-images, each relating to one illumination pulse;
- f. A memory unit for receiving from said focal plan array the captured spot-images, and for storing them;
- g. A correlating unit for correlating images stored in said memory by finding similarity between features of overlapping portions of neighboring spot-images; and
- h. A combining unit receiving information from said correlating unit for combining the spot-images to form a complete image of the scanned area
2. A system according to claim 1 wherein the degree of overlap is determined by the speed of scanning movement, and by the rate of the series of pulses generated by the pulse generator.
3. A system according to claim 1 wherein the amount of overlapping

between spots is inversely proportional to the distance from the target.

4. System according to claim 1 wherein the gimbals receive a direction signal to the target from a target locating unit, and motion compensation signal from a motion compensation unit.
5. System according to claim 1 wherein the size of the scanning steps is made inversely proportional to the range to the target.
6. System according to claim 1 wherein the width of ray is in the range of 0.1mrad to 0.4mrad.
7. System according to claim 1 wherein the rate of overlap between adjacent spots is in the range of 10% - 30%.